^{37}Ca

The discovery of ^{37}Ca was simultaneously reported in 1964 by Hardy and Verrall in "Calcium-37" (1964Ha42) and Reeder et al. in "New Delayed-Proton Emitters: Ti^{41}, Ca^{37}, and Ar^{33}" (1964Re08). Hardy and Verrall bombarded a calcium target with an 85 MeV proton beam from the McGill synchrocyclotron. The delayed proton spectrum was measured with a surface barrier silicon detector to identify the presence of ^{37}Ca. "The threshold for production from stable calcium (97% ^{40}Ca) was found to be 7 MeV higher than that from potassium (93% ^{39}K), and was approximately 47 MeV. These results are compatible only with the reactions ^{40}Ca(p,$d2n$)^{37}Ca and ^{39}K(p,$3n$)^{37}Ca, whose calculated laboratory energy thresholds are 44.6 and 38.5 MeV. This establishes the activity as following the decay of ^{37}Ca." Reeder et al. used the 60-in. cyclotron at Brookhaven to bombard gaseous ^{36}Ar with ^{3}He at a maximum energy of 31.8 MeV. Proton spectra were measured by two surface barrier detectors. "The excitation function observed for Ca^{37} has a threshold at 20±2 MeV which is consistent with the predicted threshold of 19.4 MeV for the (He^3,$2n$) reaction." The papers were submitted on the same day and published in the same issue of Physical Review Letters. The primary credit is given to Hardy and Verrall because it appears first in the journal.

Adapted from reference (2011Am01)

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